

# इंटरनेट

# मानक

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IS 5135-2 (1994): Hand Rotary Duster, Part 2: Shoulder Mounted Type [FAD 21: Farm Implements and Machinery]



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Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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IS 5135 ( Part 2 ) : 1994

भारतीय मानक  
हस्त चालित भुरकाव यन्त्र

भाग 2 कंधे पर रखा जाने वाला  
( पहला पुनरीक्षण )

*Indian Standard*  
SPECIFICATION FOR HAND ROTARY  
DUSTER

PART 2 SHOULDER MOUNTED TYPE

( *First Revision* )

UDC 631 348'46

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BUREAU OF INDIAN STANDARDS  
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NEW DELHI 110 002

August 1994

Price Group 2

**AMENDMENT NO. 1 MARCH 1996**  
**TO**  
**IS 5135 ( Part 2 ) : 1994 SPECIFICATION FOR HAND**  
**ROTARY DUSTER**  
**PART 2 SHOULDER MOUNTED TYPE**

*( First Revision )*

*( Page 3, clause 6.1, line 2 ) — Substitute '7 500 cm<sup>3</sup>' for '7 000 cm<sup>3</sup>'.*

FAD 25 )

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Reprography Unit, BIS, New Delhi, India

## FOREWORD

This Indian Standard (First Revision) was adopted by Bureau of Indian Standards after the draft finalized by the Crop Protection Equipment Sectional Committee, had been approved by Food and Agriculture Division Council.

This standard was first published in 1977. A revision of the standard has been taken up to incorporate certain improvements found necessary in the light of modification suggested by the testing authorities and the manufacturers.

The figure given in this standard is meant only for illustration. This should not be considered as suggestive of any standard design.

Hand rotary dusters on the basis of their mounting are mainly of two types: (a) belly-mounted, and (b) shoulder-mounted. This part (Part 2) covers the requirements of shoulder-mounted type dusters while Part 1 covers belly mounted type dusters.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

# Indian Standard

## SPECIFICATION FOR HAND ROTARY DUSTER

### PART 2 SHOULDER MOUNTED TYPE

( First Revision )

#### 1 SCOPE

1.1 This standard (Part 2) prescribes material, performance, and other requirements of hand rotary duster, shoulder-mounted type used for dusting pesticides in powder form.

#### 2 REFERENCES

The following Indian Standards are necessary adjuncts to this standard.

IS No.	Title
5135 (Part 1) : 1994	Hand rotary duster : Part 1 Belly mounted type (first revision)
7201 (Part 1) : 1987	Methods of sampling for agricultural machinery and equipment: Part 1 Hand tools and hand operated/animal-drawn equipment (first revision)

#### IS No.

12482 : 1988

#### Title

Methods of test for manually operated dusters (Reaffirmed Dec 93)

#### 3 TERMINOLOGY

3.1 For the purpose of this standard, the definitions given in IS 5135 (Part 1) : 1994 shall apply (see also Fig. 1).

#### 4 MATERIALS

4.1 The material of construction of various components of the duster shall be selected from col 3 of Table 1. The material should conform to the relevant Indian Standards. Some of the relevant Indian Standards are given in Annex A of IS 5135 (Part 1) : 1994 for guidance.

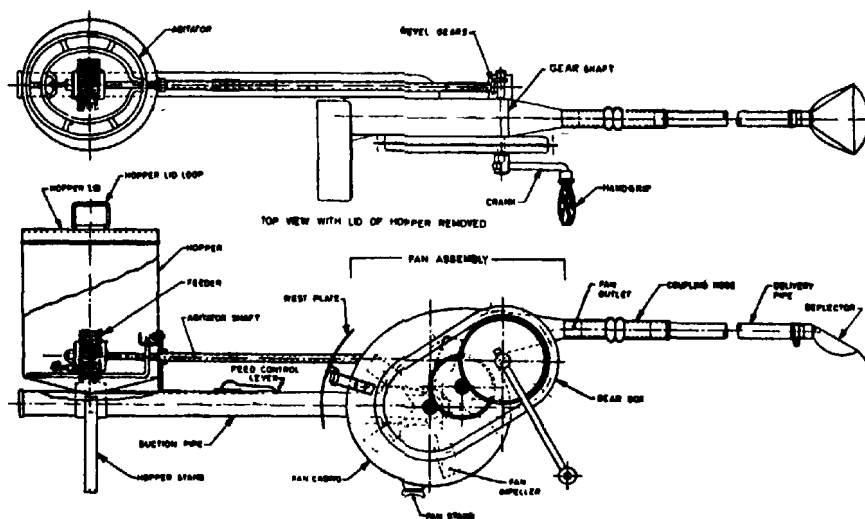


FIG. 1 NOMENCLATURE OF A HAND ROTARY DUSTER, SHOULDER MOUNTED TYPE

**Table 1 Materials of Construction of Various Component  
( Clause 4.1 )**

Sl No. (1)	Component (2)	Material (3)
i)	Hopper	Galvanized steel sheet/Aluminium alloy/Engg Plastic
ii)	Hopper lid	Same as for (i)
iii)	Lid loop	Steel/Galvanized steel sheet/Aluminium alloy Engg Plastic
iv)	Rest plate	Steel/Engg Plastic
v)	Gear housing	Cast Iron/Aluminium alloy Galvanized steel/Engg Plastic
vi)	Gear	Gun metal/Bronze/ Steel/Nylon
vii)	Agitator	Steel/Aluminium alloy/Engg Plastic
viii)	Gear shaft	Steel
ix)	Crank	do
x)	Agitator shaft	do
xi)	Feed control lever	Galvanized steel/Brass
xii)	Hand grip	Wood/Engg Plastic
xiii)	Feeder	Nylon/Aluminium alloy wire/Coir
xiv)	Suction Pipe	Galvanized steel/Aluminium alloy
xv)	Fan casing	Galvanized steel/Steel Ni Cr plated/Aluminium alloy/ Engg Plastic
xvi)	Fan impeller	Same as for (xv)
xvii)	Hopper stand	Galvanized steel/Steel/Aluminium alloy
xviii)	Fan stand	Same as for (xvii)
xix)	Coupling hose	Braided rubber/Engg Plastic
xx)	Strap	Woven web cotton/Synthetic yarn
xxi)	Gasket	Synthetic rubber/Tibre/PVC
xxii)	Flow clamp	Steel/Galvanized steel
xxiii)	Cushion	Foam rubber/Foam Plastic
xxiv)	Delivery pipe	Engg Plastic
xxv)	Dust deflector	Same as for (xxiv)

4.2 All the metallic parts coming in contact with the pesticide should preferably be of the same material to minimize electrolytic deterioration.

4.3 The material used for different components shall be declared by the manufacturer in the manual (see 5.15)

## 5 CONSTRUCTIONAL REQUIREMENTS

### 5.1 Hopper

The hopper shall have a concave shaped or conical bottom so that the dust contained in it moves towards the feeding aperture. On top of the hopper, a filler hole of at least 130 mm in diameter shall be provided. The hole shall be covered with a lid. On the centre of the lid, a loop or other arrangement shall be provided to lift the lid. An easily operating locking device may be provided to hold the lid securely in place during operation.

### 5.2 Feed Control Device

A feed control device with locking arrangements shall be provided to control the flow of dust through the aperture. The mechanism shall be controlled by a lever from outside of the hopper or suction pipe and shall not require any tool for the

operation. Provision of an index pointer with marking of the aperture, opening of hopper at positions closed, 1/4, 1/2, 3/4 and full shall be provided.

### 5.3 Agitator and Feeder

An agitator either integral with the feeder or separate shall be incorporated within the hopper to keep the dust agitated and to avoid the clogging of the aperture and for feeding the dust to the aperture.

5.3.1 When tested in accordance with the method given in 6.1 of IS 12482 : 1988, the mass of the dust which remains in the hopper, shall be not more than 500 g.

### 5.4 Gear Box and Gears

The gear box shall be so designed as to allow easy access to gears. A suitable gasket may be provided to make the housing dust-proof. A stand may be provided at bottom of the box to prevent its denting. The gears shall mate correctly and shall move smoothly.

### 5.5 Crank

A crank shall be fitted with the gear shaft which should function in a clockwise motion. The crank



shall be fitted with a hand grip of sufficient size. The hand grip shall be in easy reach of the operator.

#### 5.6 Rest Plate

A rest plate shall be provided.

#### 5.7 Fan

The fan impeller shall be covered with a leak-proof fan casing. A gasket may be used to make the casing leak-proof. The fan impeller shall be statically balanced. A stand may be provided at the bottom of the casing.

#### 5.8 Suction Pipe

It shall be fitted at centre of the fan casing and extended up to rear end of hopper through the aperture of the hopper. It shall be securely attached so that no leakage of the dust occurs. The end of the pipe should be reinforced with beeding or metal rings. The suction pipe shall have an internal diameter not more than 60 mm.

#### 5.9 Coupling Hose

A flexible coupling hose shall be provided to connect the fan casing outlet with the delivery pipe in case delivery pipe itself is non-flexible.

#### 5.10 Delivery Pipe

It may be of flexible or rigid type. If of flexible type, it shall be directly connected through hose clip with fan casing outlet. If of rigid type, it shall be connected with coupling hose. The delivery pipe may be either in a single piece or in two pieces.

#### 5.11 Deflector

A dust deflector integral with the delivery pipe or permanently fixed or tightly fitted with the delivery pipe shall be provided.

#### 5.12 Strap

A strap of suitable length and 3.8 cm minimum width shall be provided in order to help easy carriage of the duster. The provision for easy adjustment of the length of the strap shall be provided. At the option of the purchaser, a cushion of minimum of 40 mm width and 20 mm thickness shall be provided with the strap at least on that portion which rests on the shoulder of the operator. The cushion, if provided, shall be covered with cotton, canvas, rexin, PVC or plastic-coated fabrics.

5.12.1 The straps and their assembly shall withstand the test prescribed in 6.3 of IS 12482-1988.

#### 5.13 Bearing

The crankshaft and fan shaft shall be provided with bush bearing and ball bearings respectively and shall be dust-proof.

#### 5.14 Total Mass

The total mass of the duster shall not exceed 8 kg.

#### 5.15 Manual

The manual shall include technical specification of the duster, material of construction of various components shown in the exploded view of the duster, instructions for operations and maintenance, common faults and their remedies and safety precautions.

### 6 CAPACITY

6.1 The total capacity of the hopper shall be 5 000 to 7 000 cm<sup>3</sup>. The capacity shall be declared by the manufacturer. The tolerance on the declared capacity shall be  $\pm 5$  percent.

### 7 PERFORMANCE REQUIREMENTS

7.1 The fan shall be able to deliver not less than 0.3 m<sup>3</sup> of air per minute when tested in accordance with the method given in 5.1 of IS 12482-1988.

7.2 Dust delivery rate shall be adjustable. Dust delivery shall be continuous. The delivery rate at maximum discharge setting shall be not less than 150 g per minute when tested in accordance with method given in 5.2 of IS 12482-1988.

7.3 When tested in accordance with method given in 5.3 of IS 12482-1988, the duster shall be able to throw the dust up to a minimum distance of one metre.

7.4 When tested in accordance with method given in 5.4 of IS 12482-1988, no leakage of dust shall occur at any point in duster.

### 8 WORKMANSHIP AND FINISH

8.1 The components of the duster shall have a smooth finish and shall be free from burrs, sharp edges and other visual defects that may be detrimental for their use.

8.2 The exposed metallic parts shall have a protective coating to prevent surface deterioration. Steel used for the components coming in contact with the pesticides shall be galvanized or plated with cadmium or nickel.

### 9 MARKING AND PACKING

#### 9.1 Marking

Each duster shall be marked with the following particulars:

- Manufacturer's name or recognized trade-mark,
- Batch and code number, and
- Hopper nominal capacity.

## 9.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

9.2.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards, Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

## 9.3 Packing

Each sprayer shall be packed, as agreed to between the purchaser and the supplier, for safe handling in transit.

## 10 SAMPLING FOR LOT ACCEPTANCE

10.1 Unless otherwise agreed to between the purchaser and the supplier, sampling of the sprayers for lot acceptance shall be done in accordance with 3 of IS 7201 (Part 1) : 1987. The classification of different requirements of this specification for the purpose of lot acceptance is given below for guidance:

- a) *Dimensional and Visual Requirements — See 5 (except 5.3.1, 5.12.1, 5.14) and 7.*
- b) *Other than Visual and Dimensional Requirements — See 5.3.1, 5.12.1, 5.14, 6 and 7.*

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such a review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Handbook' and 'Standards Monthly Addition'.

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### **Amendments Issued Since Publication**

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